Fig. 1

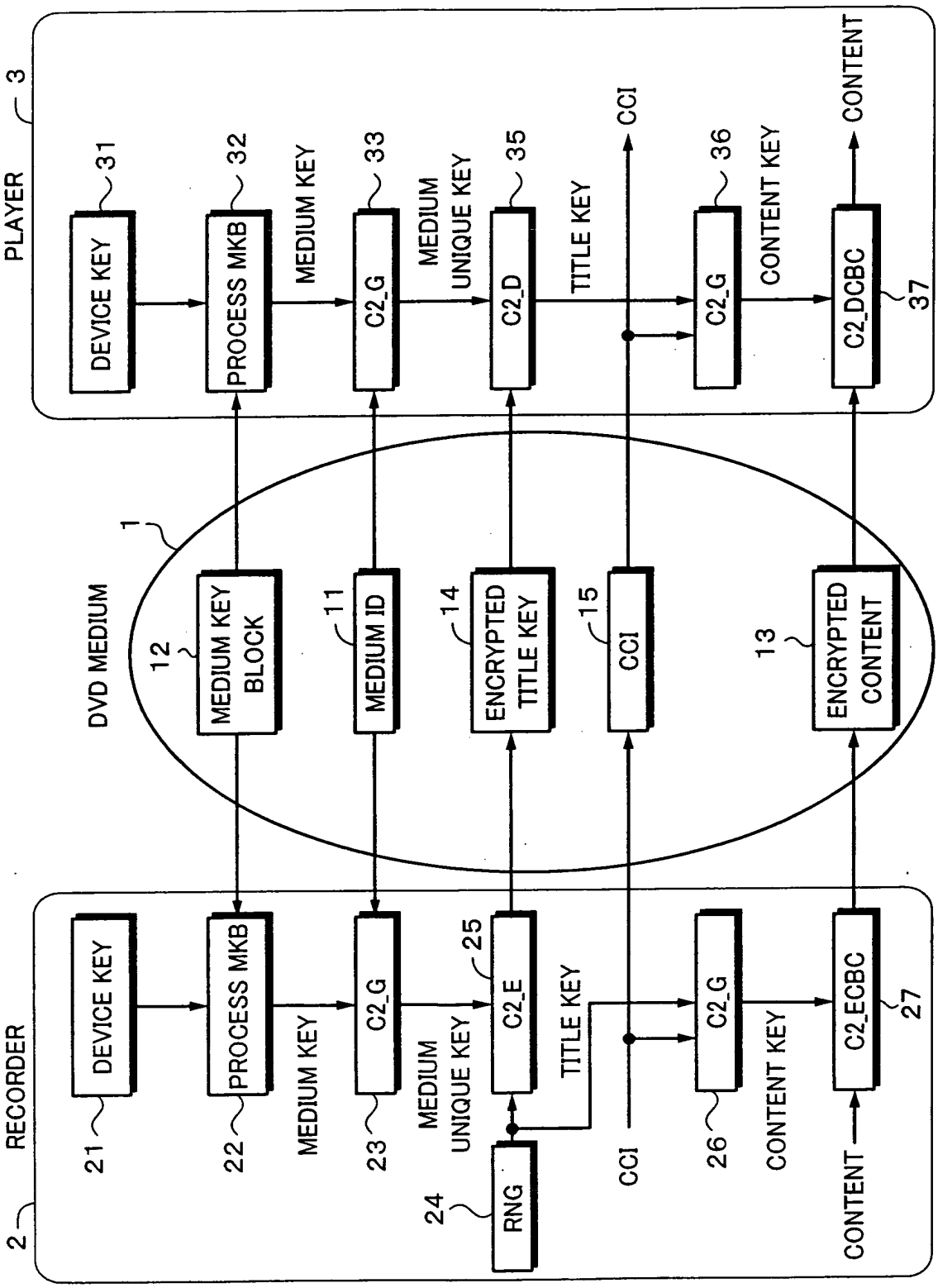

PLAYER
3
DEVICE KEY
31
PROCESS MKB
32
MEDIUM KEY
C2_G
33
MEDIUM UNIQUE KEY
C2_D
35
TITLE KEY
CCI
C2_G
36
CONTENT KEY
C2_DCBC
37
CONTENT
DVD MEDIUM
1
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13
RECORDER
2
DEVICE KEY
21
PROCESS MKB
22
MEDIUM KEY
C2_G
23
MEDIUM UNIQUE KEY
C2_E
25
TITLE KEY
RNG
24
CCI
C2_G
26
CONTENT KEY
C2_ECBC
27
CONTENT

Fig. 2

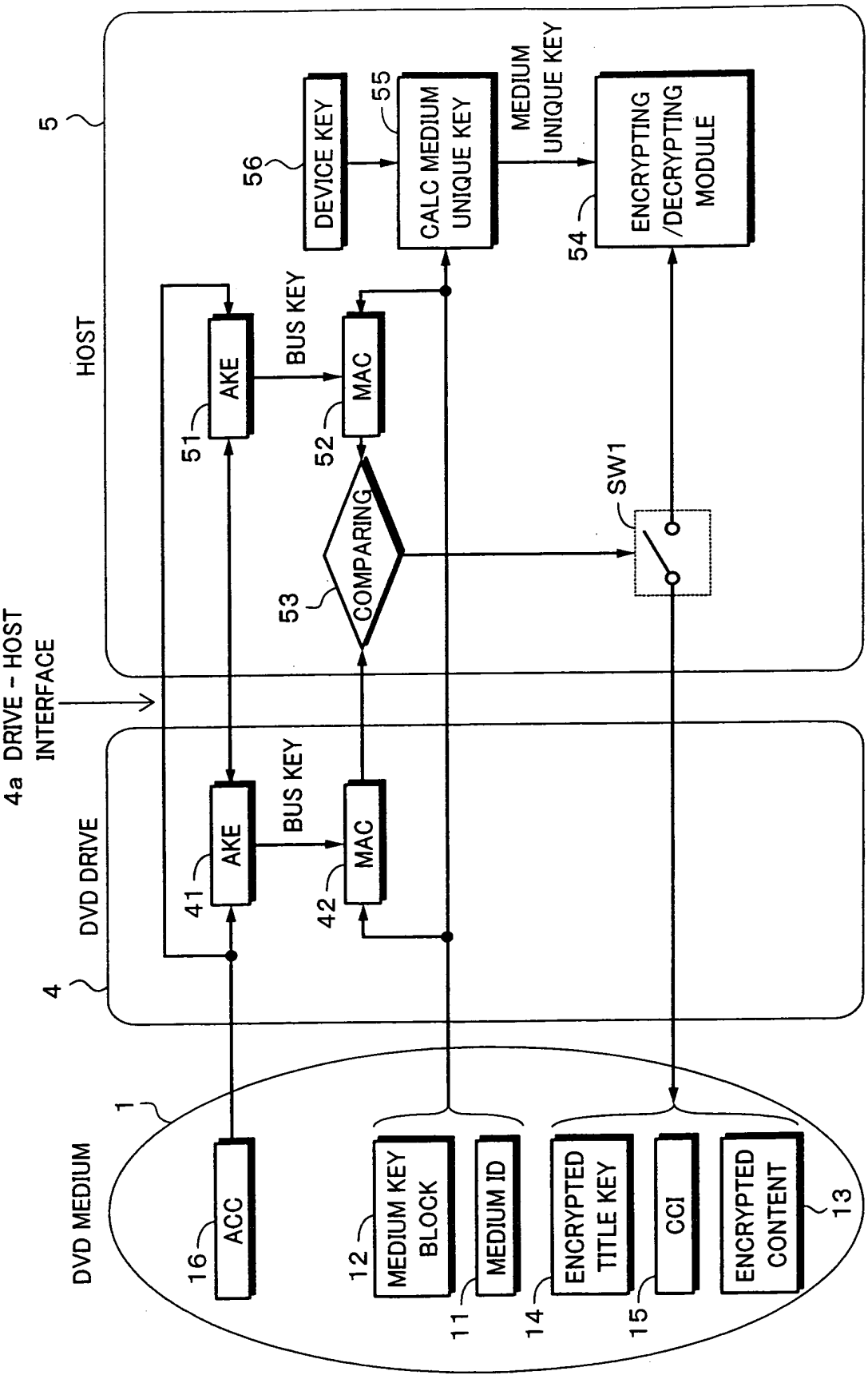

5
HOST
DEVICE KEY
56
CALC MEDIUM UNIQUE KEY
55
MEDIUM UNIQUE KEY
ENCRYPTING /DECRYPTING MODULE
54
AKE
51
BUS KEY
MAC
52
COMPARING
53
SW1
4a DRIVE - HOST INTERFACE
4
DVD DRIVE
AKE
41
BUS KEY
MAC
42
1
DVD MEDIUM
ACC
16
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13

Fig. 3

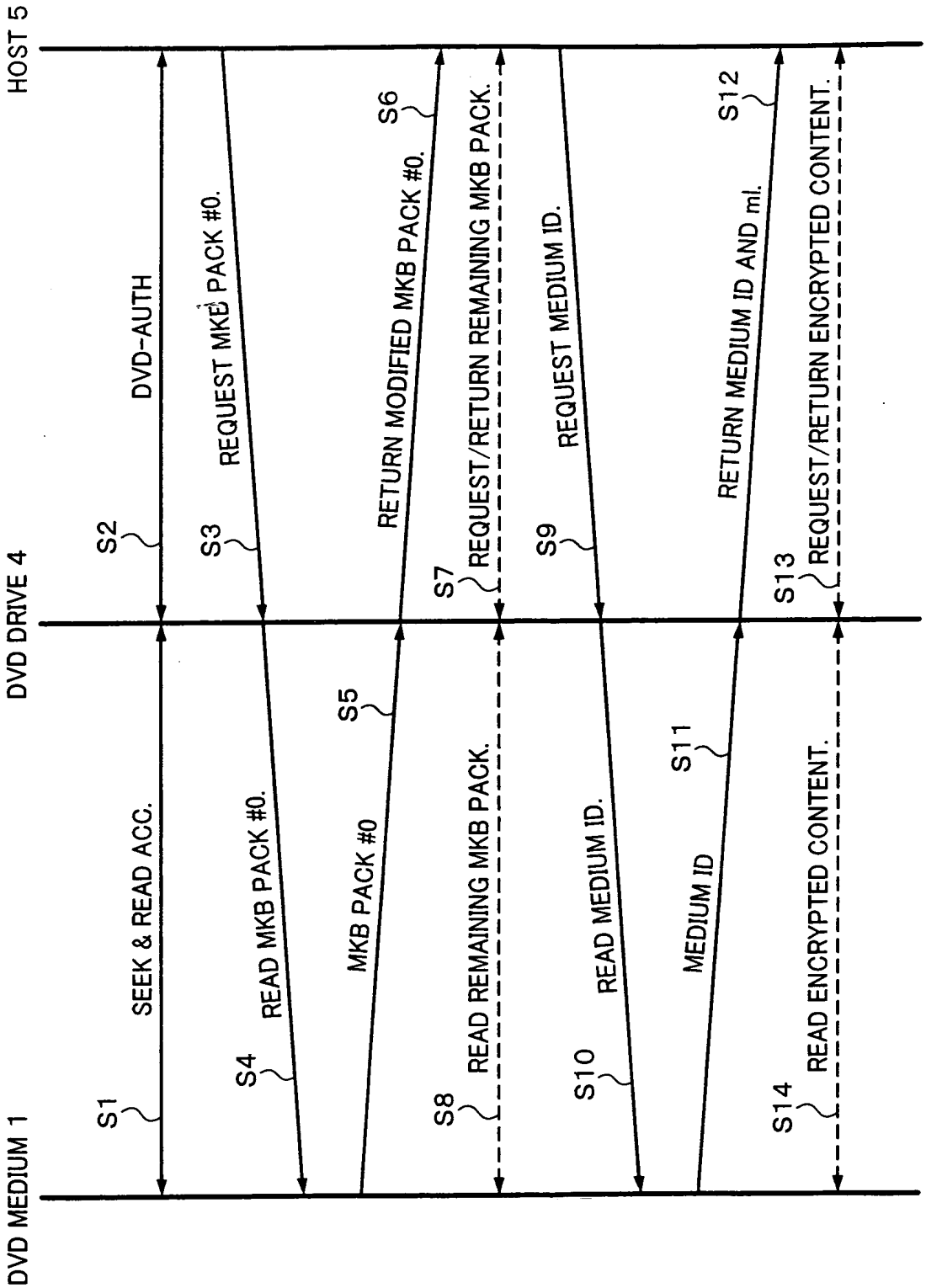

HOST 5
DVD DRIVE 4
DVD MEDIUM 1
S1
SEEK & READ ACC.
S2
DVD-AUTH
S3
REQUEST MKB PACK #0.
S4
READ MKB PACK #0.
S5
MKB PACK #0
S6
RETURN MODIFIED MKB PACK #0.
S7
REQUEST/RETURN REMAINING MKB PACK.
S8
READ REMAINING MKB PACK.
S9
REQUEST MEDIUM ID.
S10
READ MEDIUM ID.
S11
MEDIUM ID
S12
RETURN MEDIUM ID AND mI.
S13
REQUEST/RETURN ENCRYPTED CONTENT.
S14
READ ENCRYPTED CONTENT.

Fig. 4

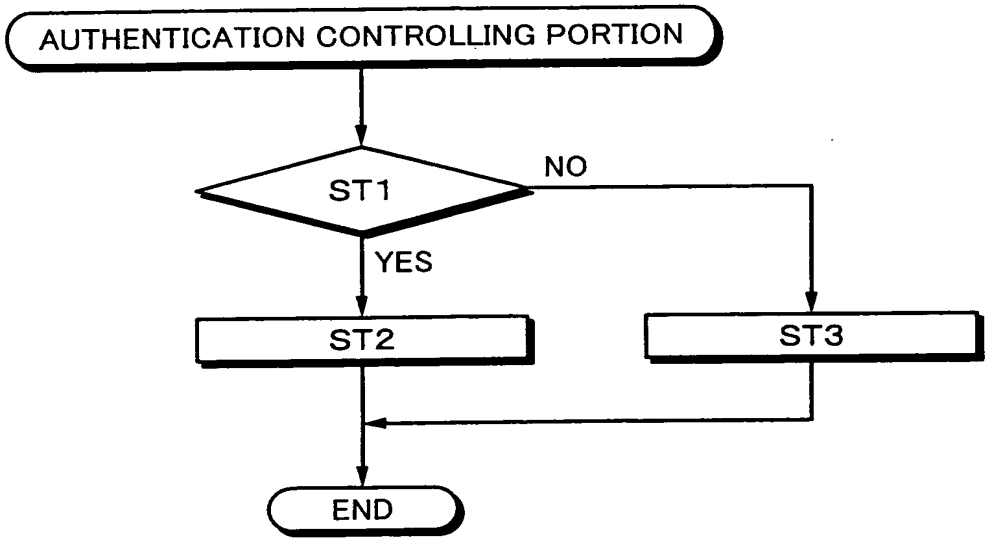


Fig. 5

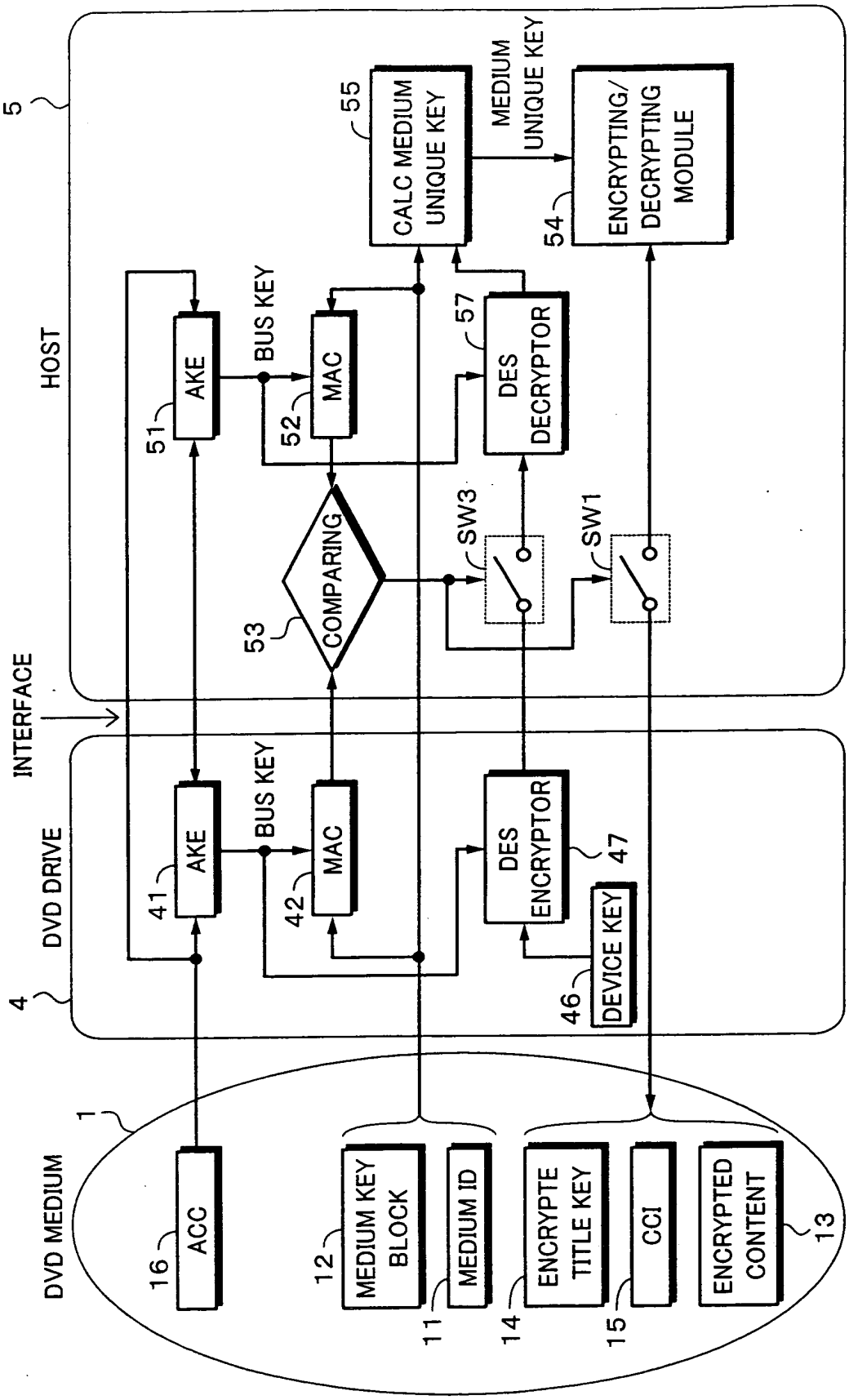

5
HOST
55
CALC MEDIUM UNIQUE KEY
MEDIUM UNIQUE KEY
54
ENCRYPTING/ DECRYPTING MODULE
57
DES DECRYPTOR
BUS KEY
51
AKE
52
MAC
53
COMPARING
SW3
SW1
4a DRIVE – HOST INTERFACE
4
DVD DRIVE
41
AKE
BUS KEY
42
MAC
DES ENCRYPTOR
47
46
DEVICE KEY
1
DVD MEDIUM
16
ACC
12
MEDIUM KEY BLOCK
11
MEDIUM ID
14
ENCRYPTE TITLE KEY
15
CCI
ENCRYPTED CONTENT
13

Fig. 6

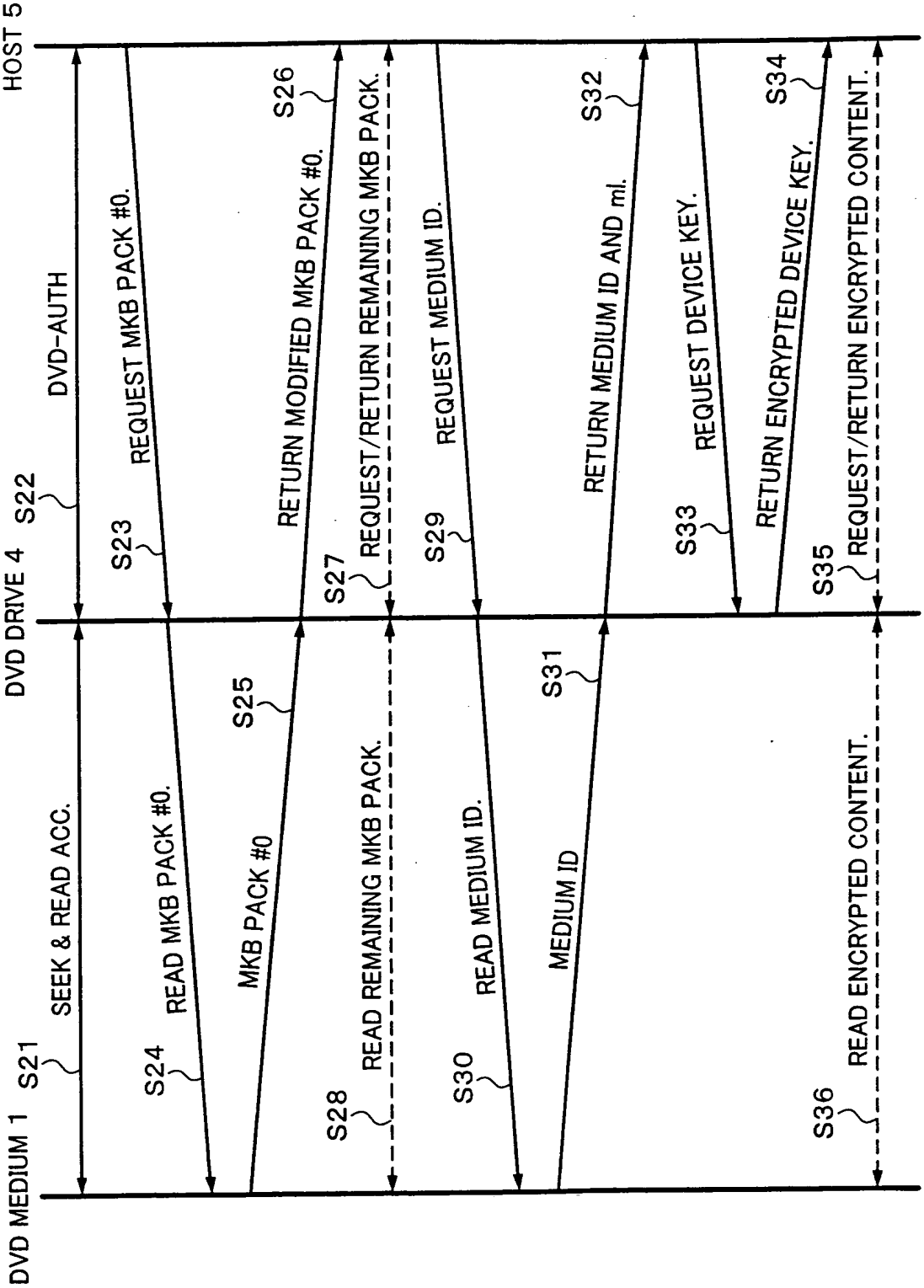

HOST 5
DVD DRIVE 4
DVD MEDIUM 1
DVD-AUTH
S22
REQUEST MKB PACK #0.
S23
RETURN MODIFIED MKB PACK #0.
S26
REQUEST/RETURN REMAINING MKB PACK.
S27
REQUEST MEDIUM ID.
S29
RETURN MEDIUM ID AND ml.
S32
REQUEST DEVICE KEY.
S33
RETURN ENCRYPTED DEVICE KEY.
S34
REQUEST/RETURN ENCRYPTED CONTENT.
S35
SEEK & READ ACC.
S21
READ MKB PACK #0.
S24
MKB PACK #0
S25
READ REMAINING MKB PACK.
S28
READ MEDIUM ID.
S30
MEDIUM ID
S31
READ ENCRYPTED CONTENT.
S36

Fig. 7

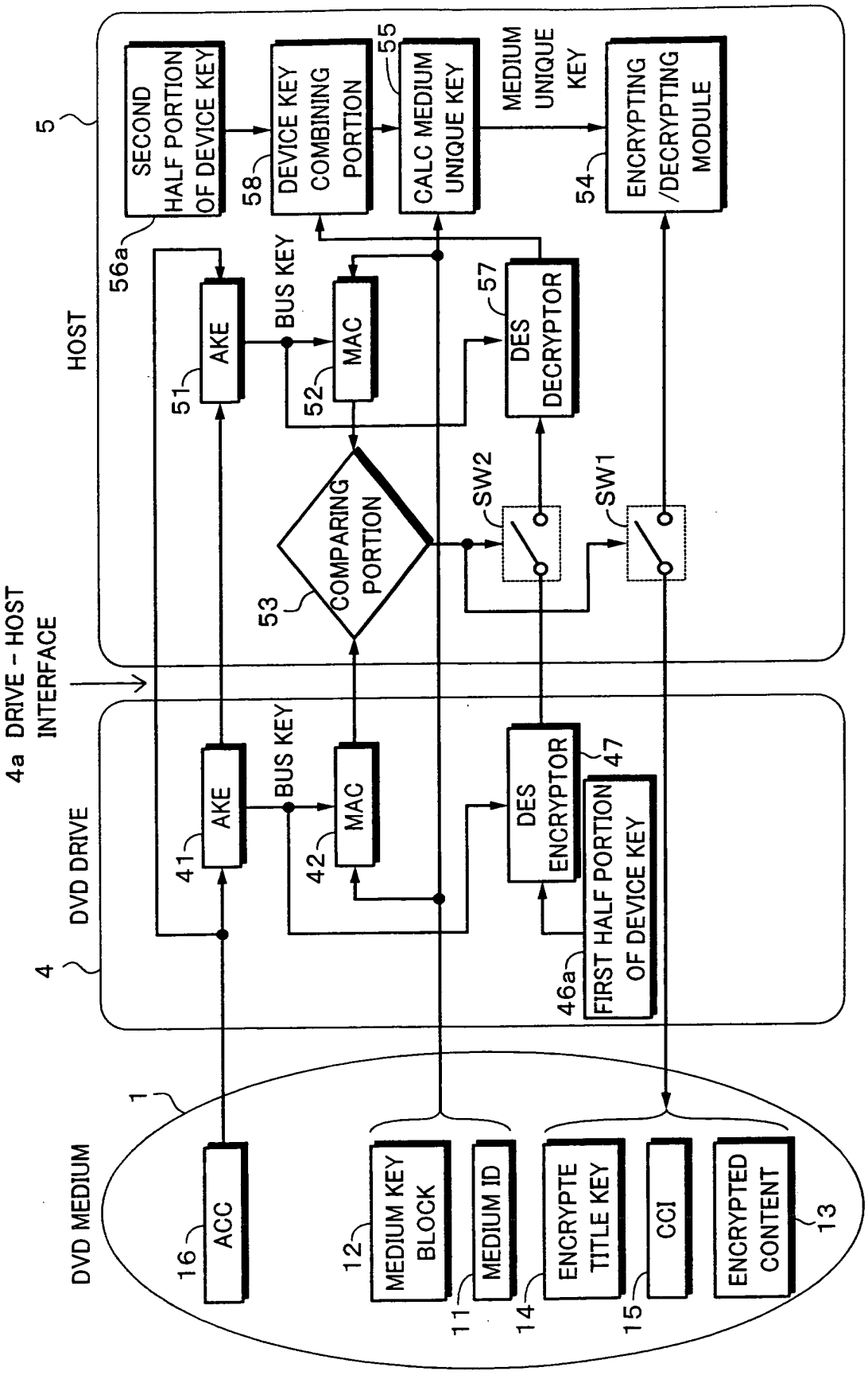

DVD MEDIUM
1
ACC
16
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTE TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13
4
DVD DRIVE
AKE
41
BUS KEY
MAC
42
DES ENCRYPTOR
47
FIRST HALF PORTION OF DEVICE KEY
46a
4a DRIVE – HOST INTERFACE
5
HOST
SECOND HALF PORTION OF DEVICE KEY
56a
AKE
51
BUS KEY
MAC
52
COMPARING PORTION
53
DES DECRYPTOR
57
SW2
SW1
DEVICE KEY COMBINING PORTION
58
CALC MEDIUM UNIQUE KEY
55
MEDIUM UNIQUE KEY
ENCRYPTING /DECRYPTING MODULE
54

Fig. 8

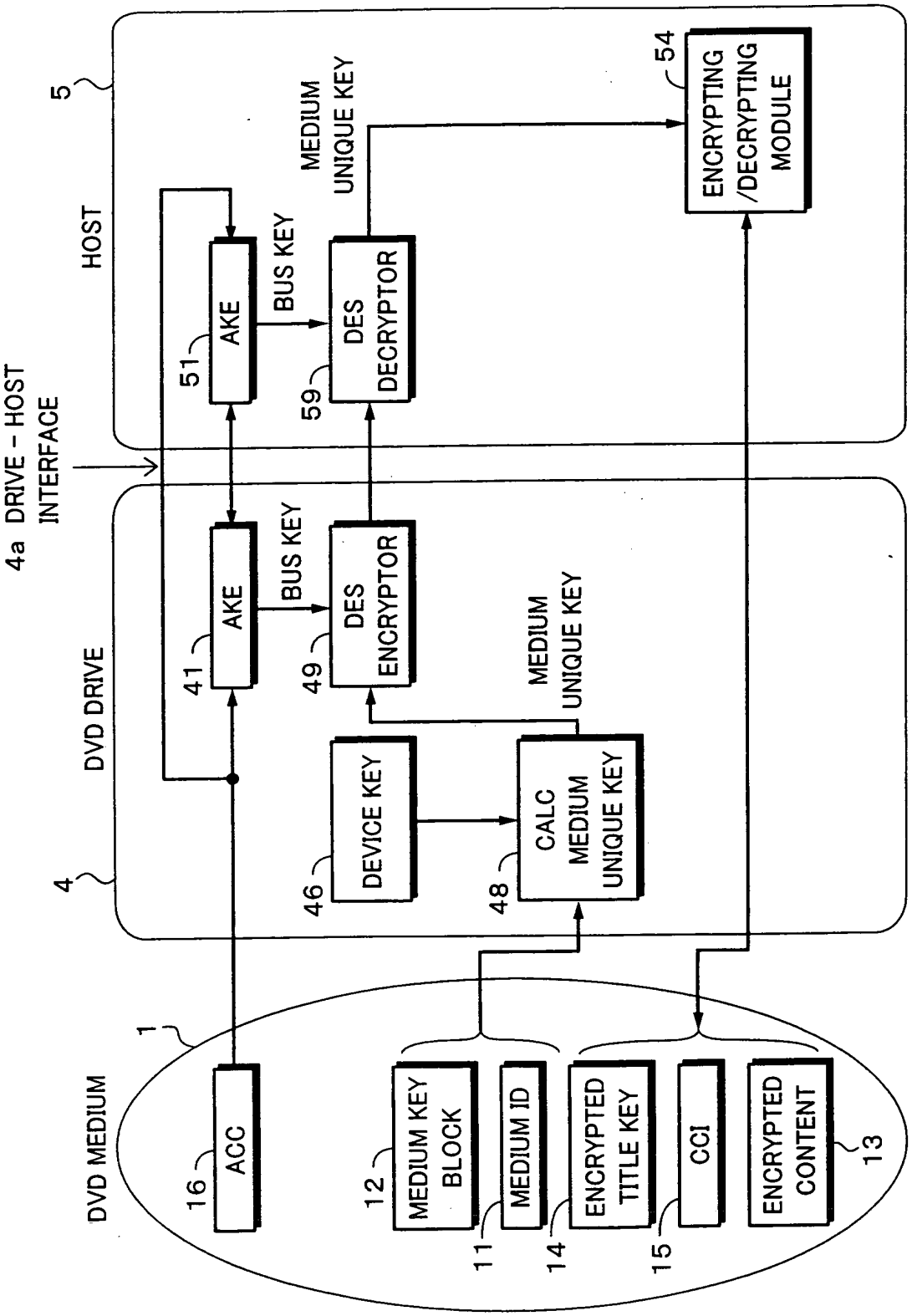

DVD MEDIUM
1
ACC
16
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13
4
DVD DRIVE
AKE
41
BUS KEY
DES ENCRYPTOR
49
DEVICE KEY
46
CALC MEDIUM UNIQUE KEY
48
MEDIUM UNIQUE KEY
4a DRIVE - HOST INTERFACE
5
HOST
AKE
51
BUS KEY
DES DECRYPTOR
59
MEDIUM UNIQUE KEY
ENCRYPTING /DECRYPTING MODULE
54

Fig. 9

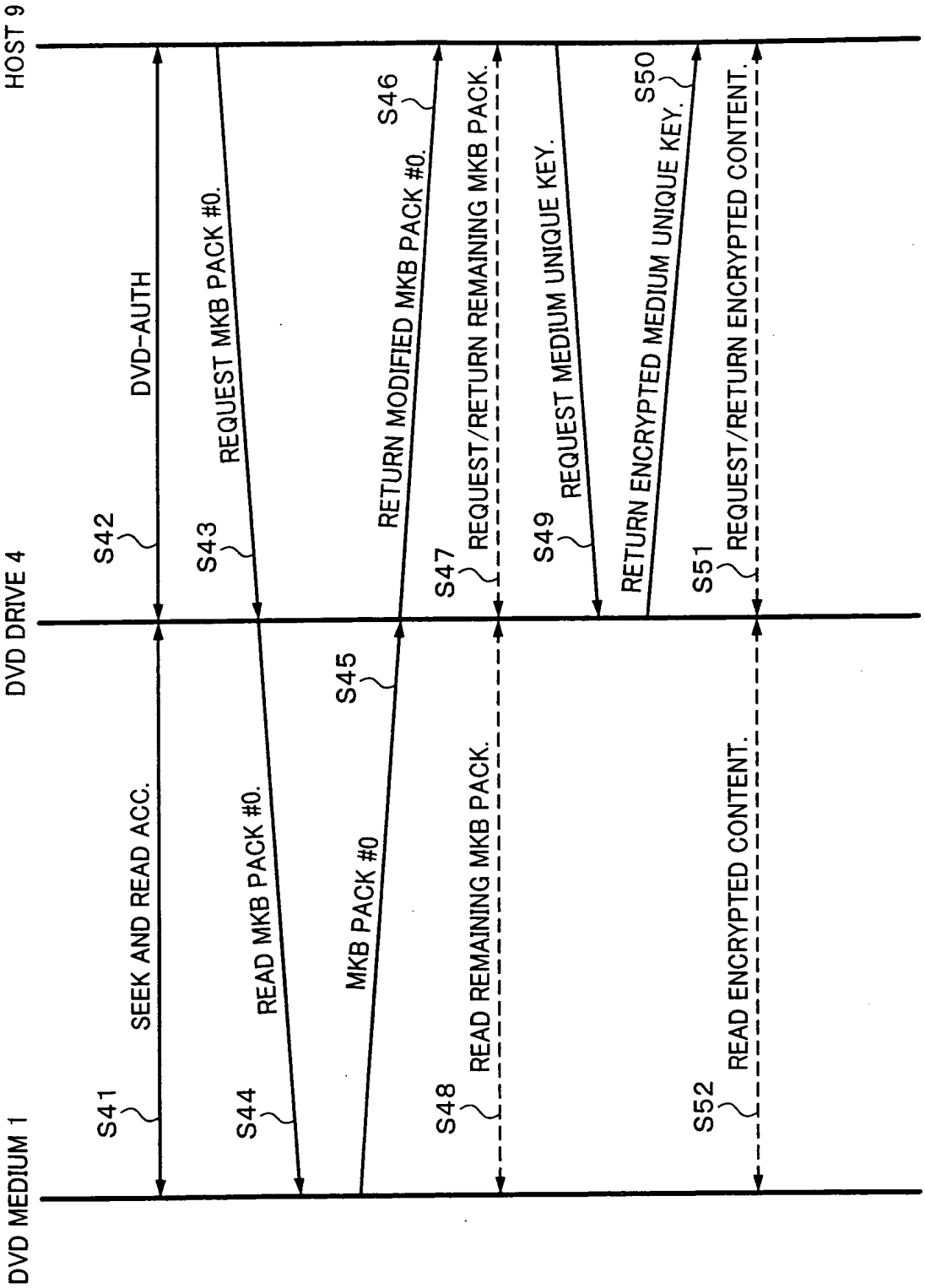

HOST 9
DVD DRIVE 4
DVD MEDIUM 1
S41
SEEK AND READ ACC.
S42
DVD-AUTH
S43
REQUEST MKB PACK #0.
S44
READ MKB PACK #0.
S45
MKB PACK #0
S46
RETURN MODIFIED MKB PACK #0.
S47
REQUEST/RETURN REMAINING MKB PACK.
S48
READ REMAINING MKB PACK.
S49
REQUEST MEDIUM UNIQUE KEY.
S50
RETURN ENCRYPTED MEDIUM UNIQUE KEY.
S51
REQUEST/RETURN ENCRYPTED CONTENT.
S52
READ ENCRYPTED CONTENT.

Fig. 10

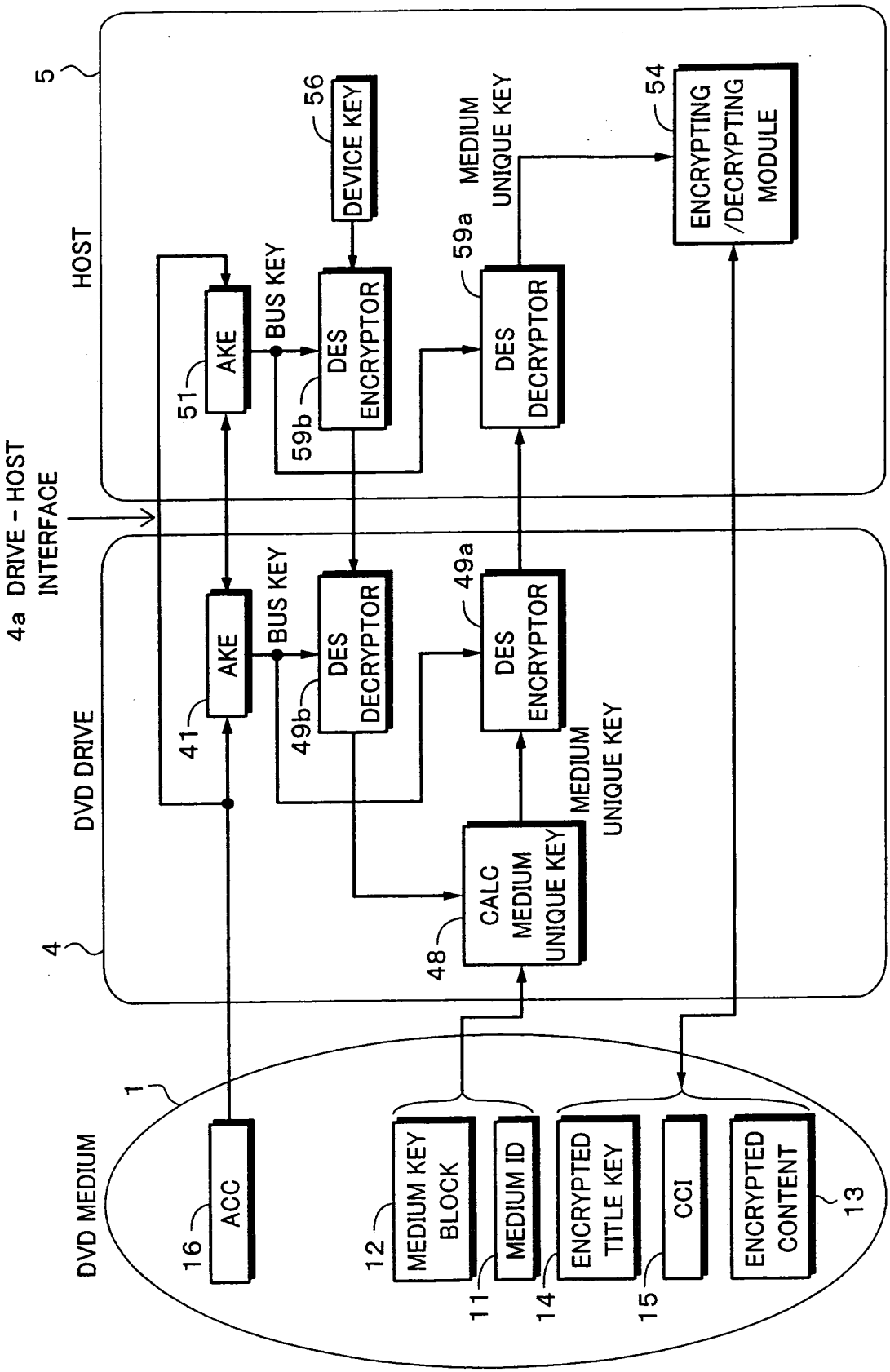

5
HOST
56
DEVICE KEY
54
ENCRYPTING /DECRYPTING MODULE
59a MEDIUM UNIQUE KEY
BUS KEY
51
AKE
59b
DES ENCRYPTOR
DES DECRYPTOR
4a DRIVE - HOST INTERFACE
DVD DRIVE
4
41
AKE
BUS KEY
49b
DES DECRYPTOR
49a
DES ENCRYPTOR
MEDIUM UNIQUE KEY
48
CALC MEDIUM UNIQUE KEY
DVD MEDIUM
1
16
ACC
12
MEDIUM KEY BLOCK
11
MEDIUM ID
14
ENCRYPTED TITLE KEY
15
CCI
ENCRYPTED CONTENT
13

Fig. 11

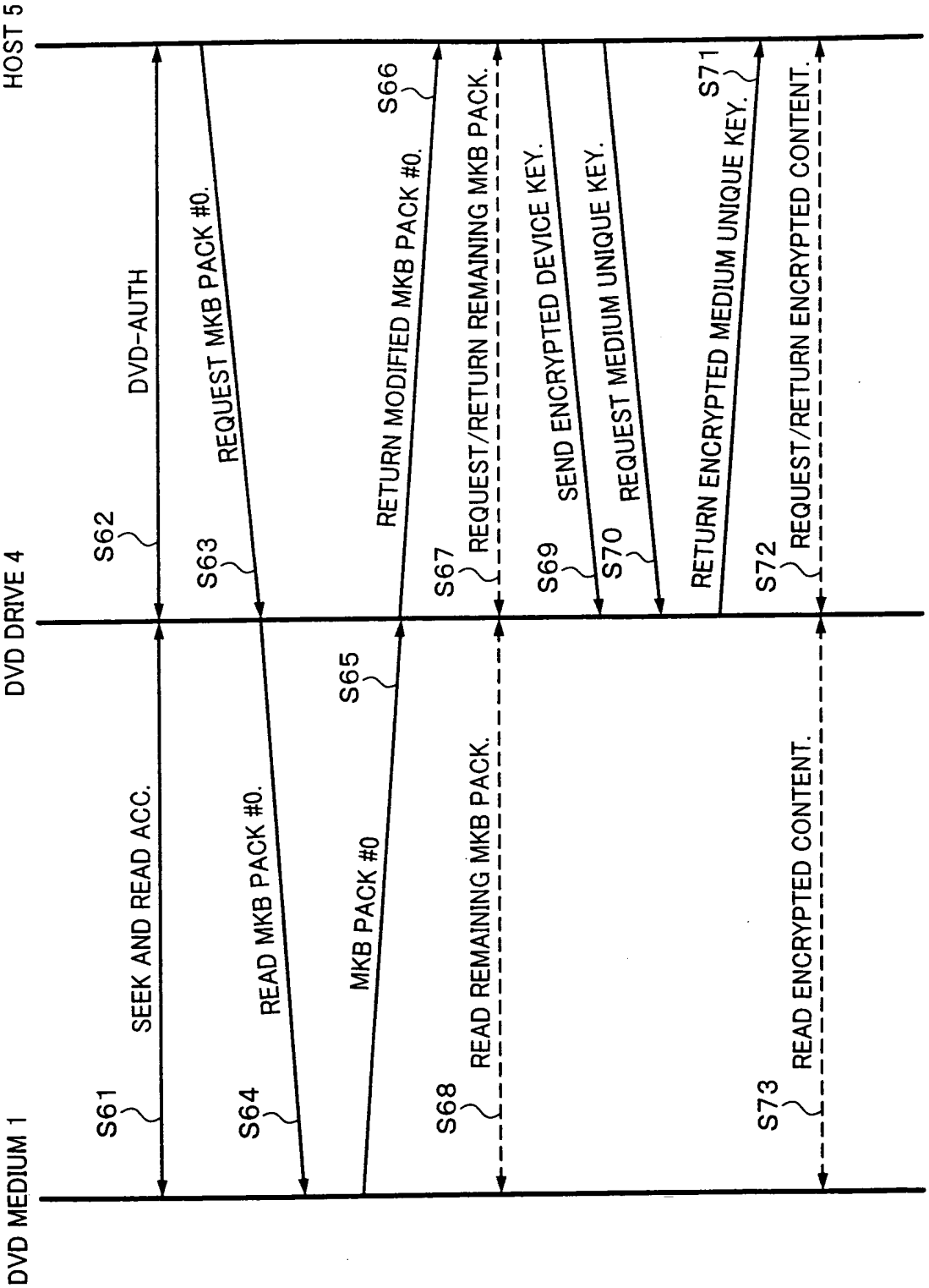

HOST 5
DVD DRIVE 4
DVD MEDIUM 1
S61
SEEK AND READ ACC.
DVD-AUTH
S62
S63
READ MKB PACK #0.
REQUEST MKB PACK #0.
S64
S65
MKB PACK #0
RETURN MODIFIED MKB PACK #0.
S66
S67
READ REMAINING MKB PACK.
REQUEST/RETURN REMAINING MKB PACK.
S68
S69
SEND ENCRYPTED DEVICE KEY.
S70
REQUEST MEDIUM UNIQUE KEY.
RETURN ENCRYPTED MEDIUM UNIQUE KEY.
S71
S72
REQUEST/RETURN ENCRYPTED CONTENT.
S73
READ ENCRYPTED CONTENT.

Fig. 12

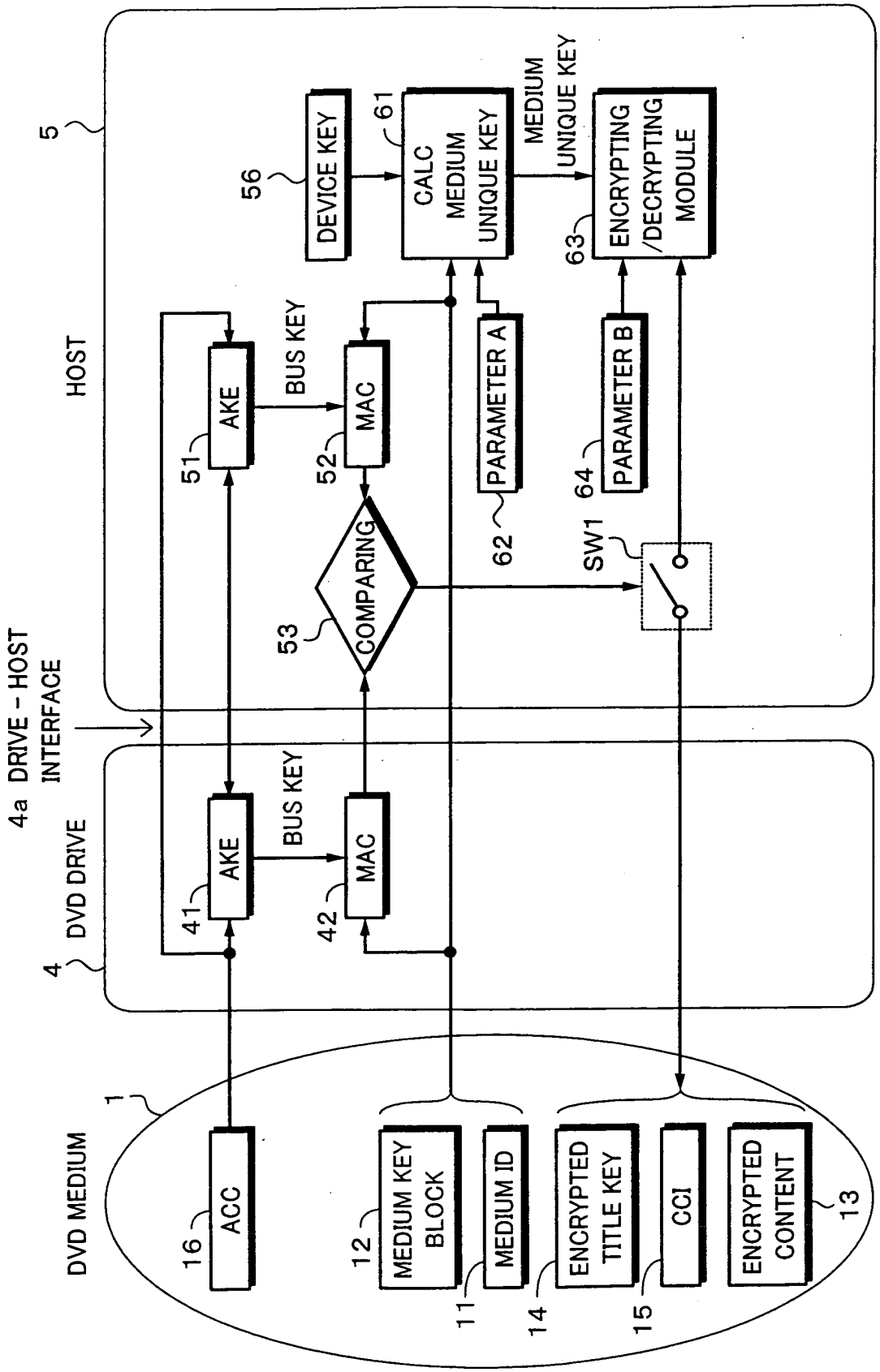

5
HOST
56
DEVICE KEY
61
CALC MEDIUM UNIQUE KEY
MEDIUM UNIQUE KEY
63
ENCRYPTING /DECRYPTING MODULE
BUS KEY
51
AKE
52
MAC
PARAMETER A
62
64
PARAMETER B
SW1
53
COMPARING
4a DRIVE - HOST INTERFACE
4
DVD DRIVE
41
AKE
BUS KEY
42
MAC
1
DVD MEDIUM
16
ACC
12
MEDIUM KEY BLOCK
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13

Fig. 13

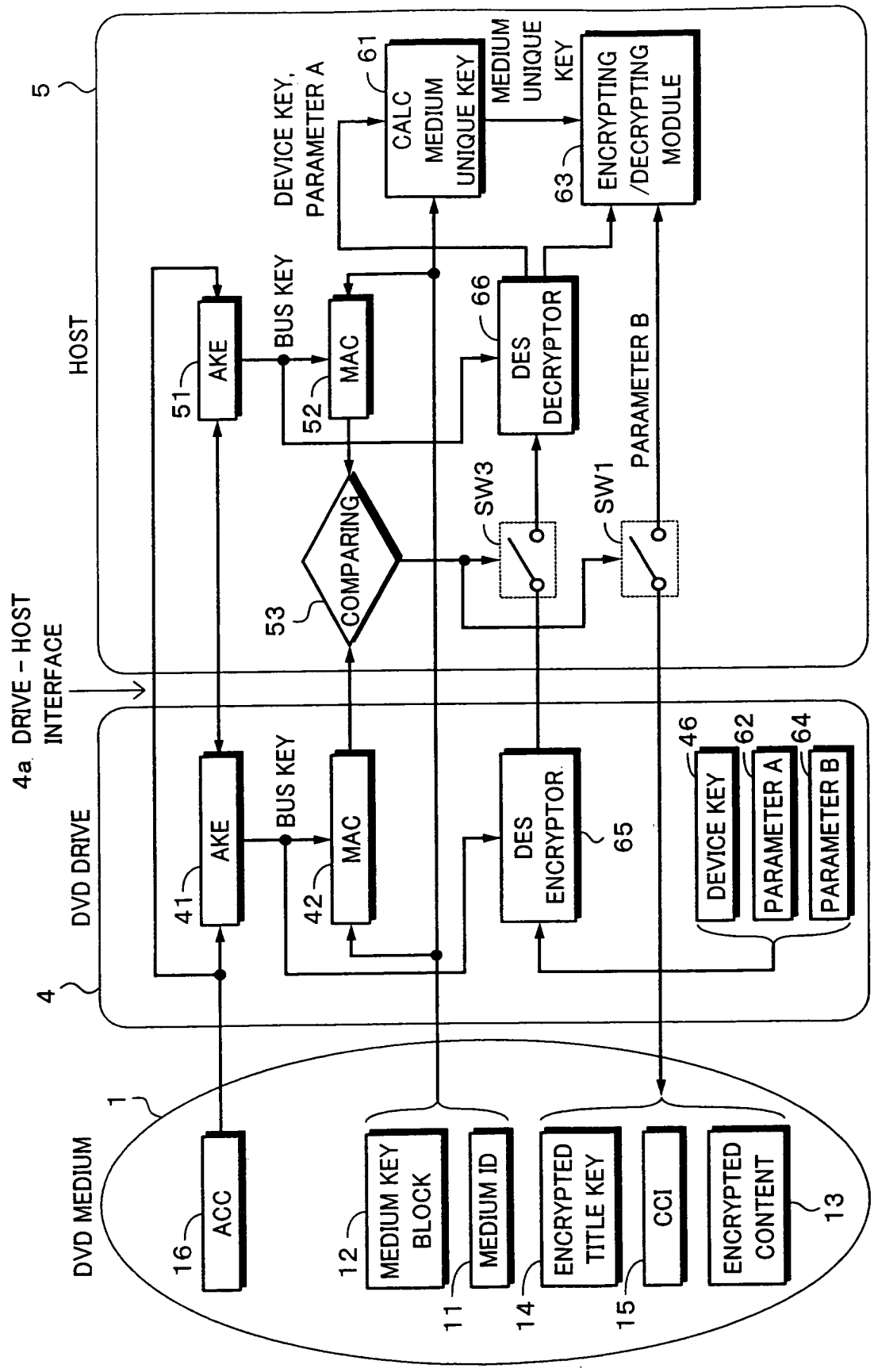

DVD MEDIUM
1
ACC
16
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13
4
DVD DRIVE
AKE
41
BUS KEY
MAC
42
DES ENCRYPTOR
65
DEVICE KEY
46
PARAMETER A
62
PARAMETER B
64
4a DRIVE – HOST INTERFACE
5
HOST
AKE
51
BUS KEY
MAC
52
COMPARING
53
SW3
SW1
DES DECRYPTOR
66
PARAMETER B
DEVICE KEY, PARAMETER A
CALC MEDIUM UNIQUE KEY
61
MEDIUM UNIQUE KEY
ENCRYPTING /DECRYPTING MODULE
63

Fig. 14

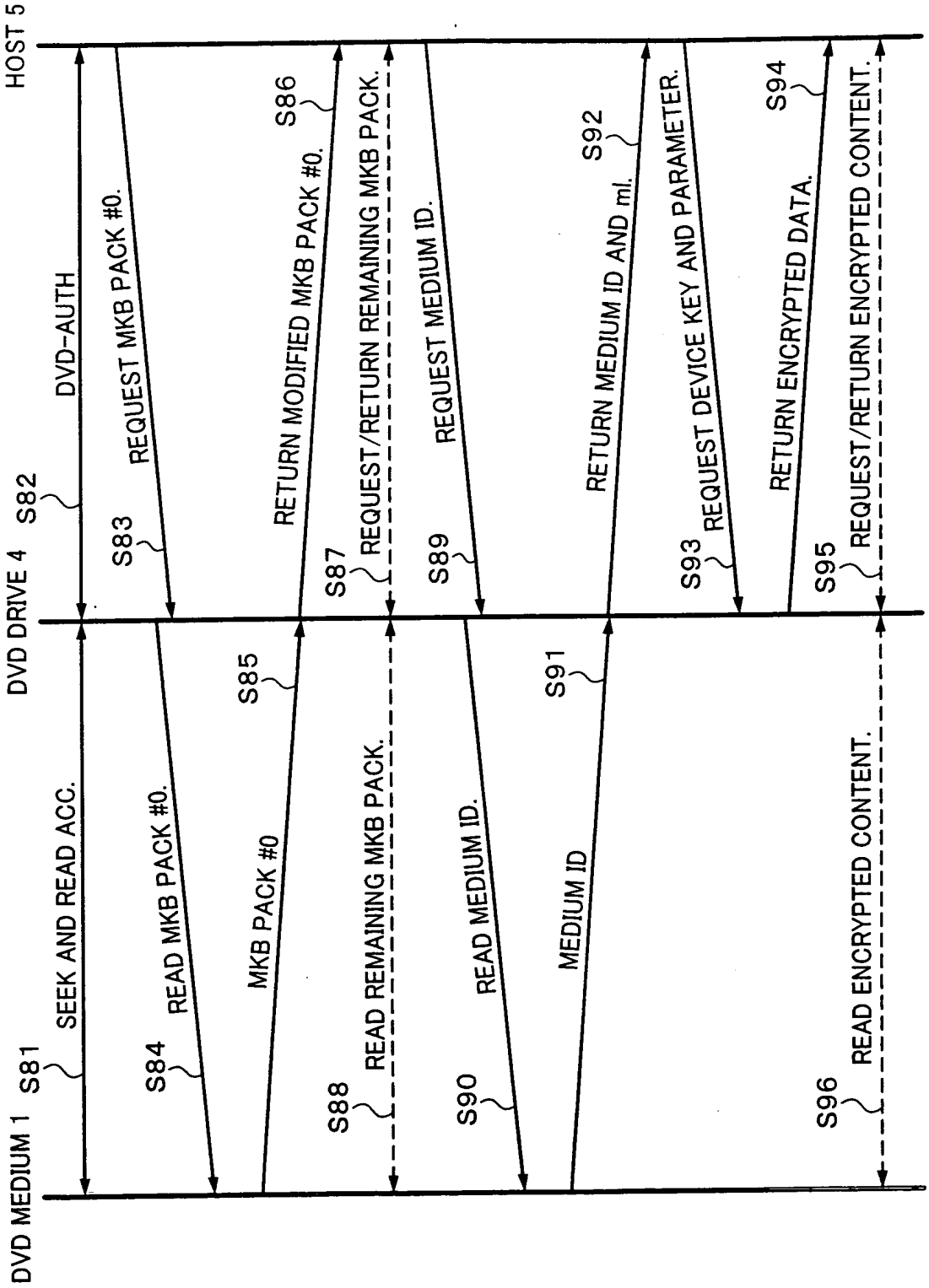

HOST 5
DVD DRIVE 4
DVD MEDIUM 1
S81
SEEK AND READ ACC.
S82
DVD-AUTH
S83
REQUEST MKB PACK #0.
S84
READ MKB PACK #0.
S85
MKB PACK #0
S86
RETURN MODIFIED MKB PACK #0.
S87
REQUEST/RETURN REMAINING MKB PACK.
S88
READ REMAINING MKB PACK.
S89
REQUEST MEDIUM ID.
S90
READ MEDIUM ID.
S91
MEDIUM ID
S92
RETURN MEDIUM ID AND mI.
S93
REQUEST DEVICE KEY AND PARAMETER.
S94
RETURN ENCRYPTED DATA.
S95
REQUEST/RETURN ENCRYPTED CONTENT.
S96
READ ENCRYPTED CONTENT.

Fig. 15

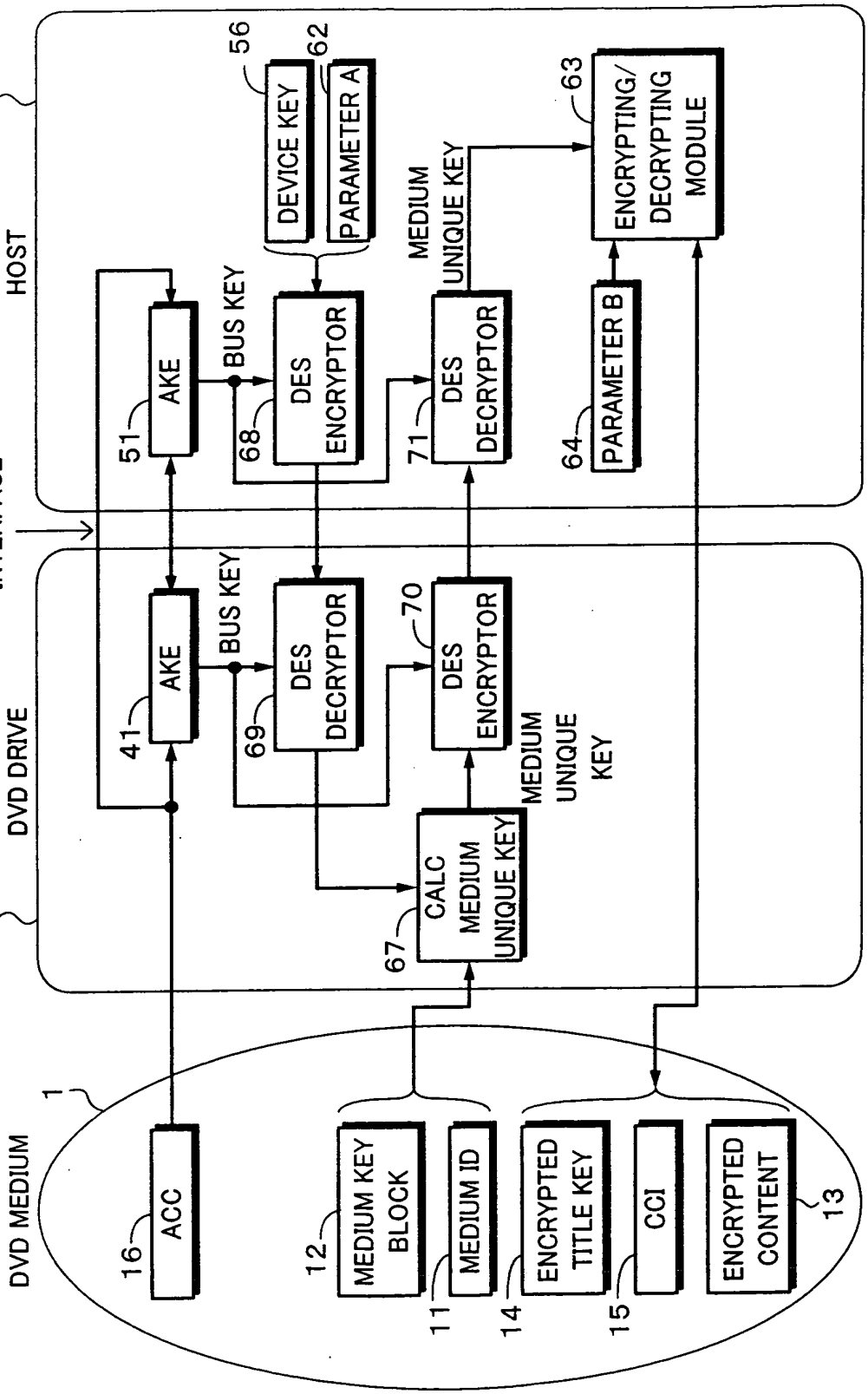

DVD MEDIUM
1
ACC
16
MEDIUM KEY BLOCK
12
MEDIUM ID
11
ENCRYPTED TITLE KEY
14
CCI
15
ENCRYPTED CONTENT
13
4
DVD DRIVE
4a DRIVE – HOST INTERFACE
5
HOST
AKE
41
AKE
51
BUS KEY
BUS KEY
DES DECRYPTOR
69
DES ENCRYPTOR
68
DES ENCRYPTOR
70
DES DECRYPTOR
71
CALC MEDIUM UNIQUE KEY
67
MEDIUM UNIQUE KEY
MEDIUM UNIQUE KEY
DEVICE KEY
56
PARAMETER A
62
PARAMETER B
64
ENCRYPTING/ DECRYPTING MODULE
63

Fig. 16

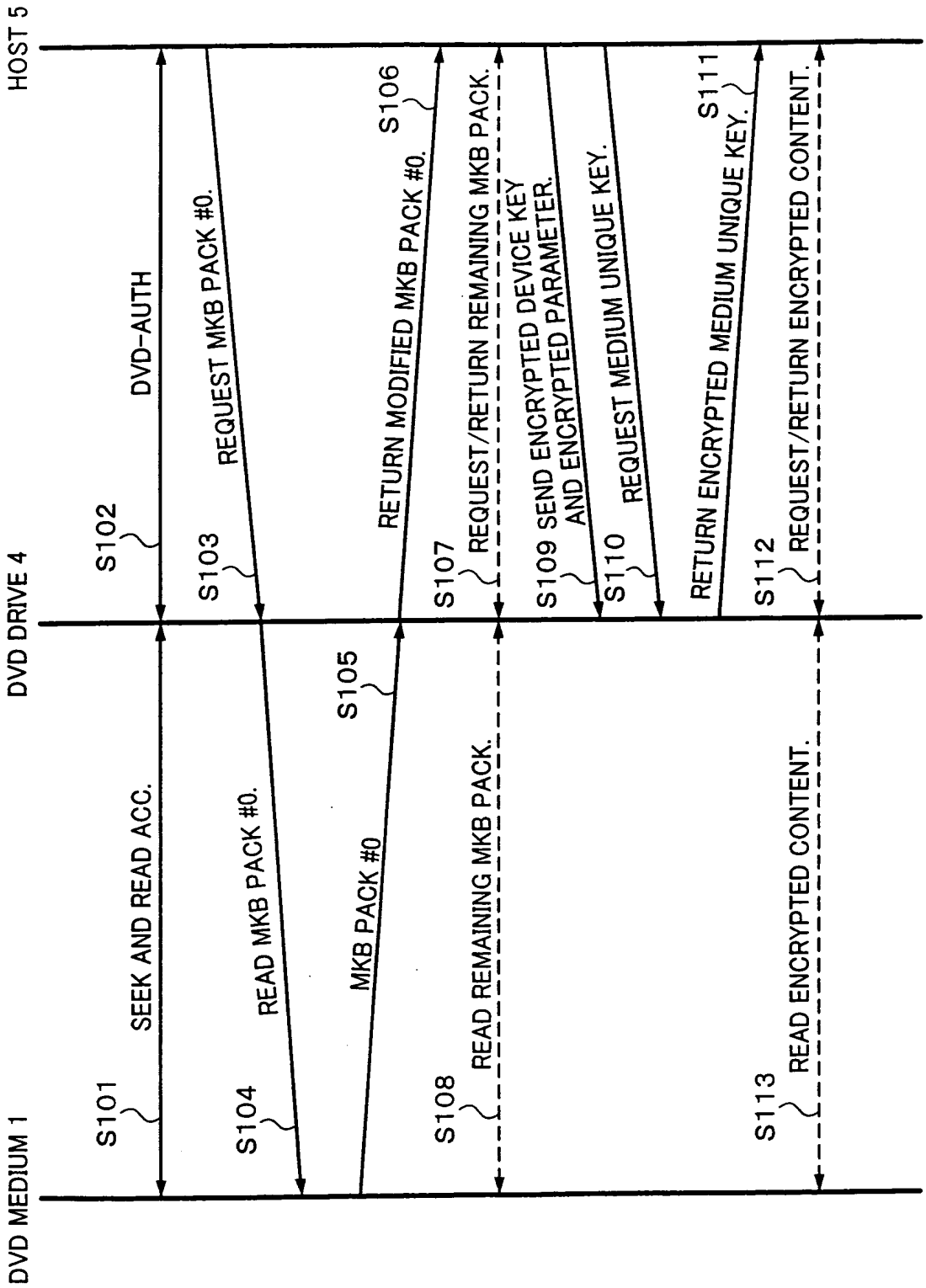

HOST 5
DVD DRIVE 4
DVD MEDIUM 1
DVD-AUTH
S102
REQUEST MKB PACK #0.
S103
RETURN MODIFIED MKB PACK #0.
S106
REQUEST/RETURN REMAINING MKB PACK.
S107
SEND ENCRYPTED DEVICE KEY AND ENCRYPTED PARAMETER.
S109
REQUEST MEDIUM UNIQUE KEY.
S110
RETURN ENCRYPTED MEDIUM UNIQUE KEY.
S111
REQUEST/RETURN ENCRYPTED CONTENT.
S112
SEEK AND READ ACC.
S101
READ MKB PACK #0.
S104
MKB PACK #0
S105
READ REMAINING MKB PACK.
S108
READ ENCRYPTED CONTENT.
S113

Fig. 17

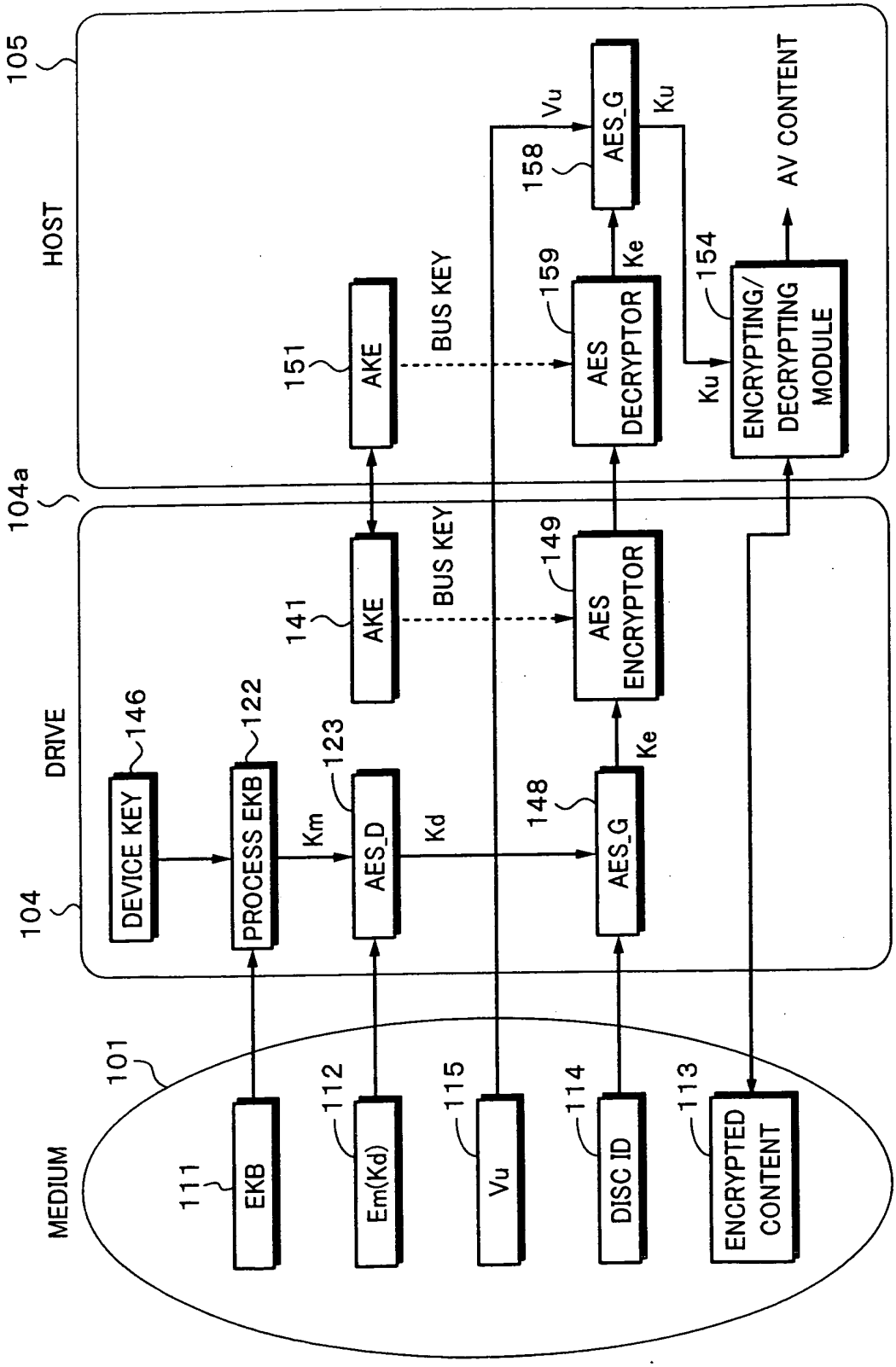
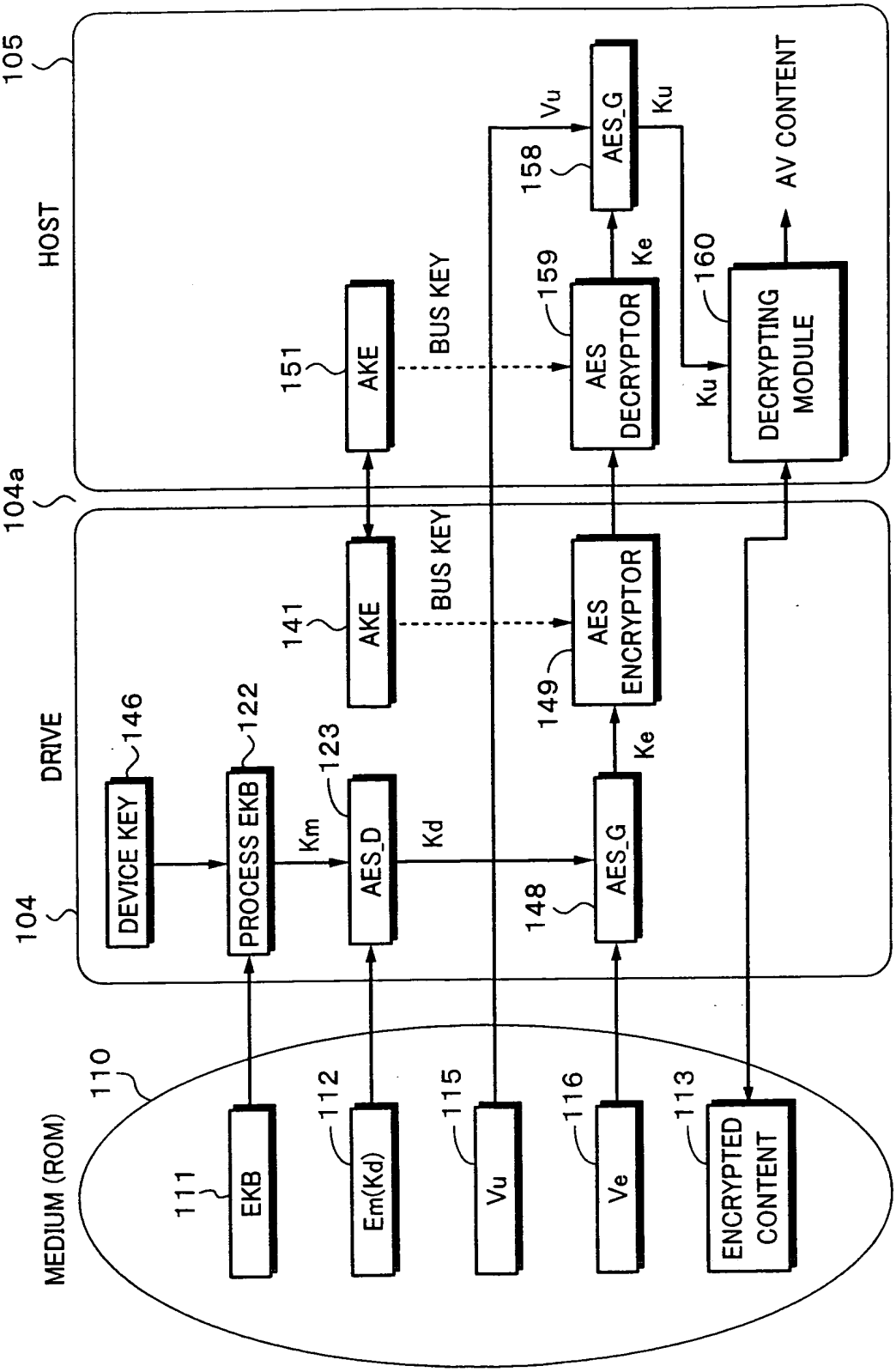

105
HOST
104a
DRIVE
104
MEDIUM
101
DEVICE KEY
146
PROCESS EKB
122
AKE
141
BUS KEY
AES ENCRYPTOR
149
AES_G
148
Ke
Km
123
AES_D
Kd
AKE
151
BUS KEY
AES DECRYPTOR
159
AES_G
158
Vu
Ku
Ke
154
ENCRYPTING/ DECRYPTING MODULE
AV CONTENT
Ku
EKB
111
Em(Kd)
112
Vu
115
DISC ID
114
ENCRYPTED CONTENT
113

Fig. 18


105
HOST
104a
DRIVE
104
MEDIUM (ROM)
110
DEVICE KEY
146
PROCESS EKB
122
AES_D
123
AKE
141
AKE
151
BUS KEY
BUS KEY
AES_G
148
AES ENCRYPTOR
149
AES DECRYPTOR
159
AES_G
158
DECRYPTING MODULE
160
AV CONTENT
Km
Kd
Ke
Ke
Ku
Ku
Vu
Vu
EKB
111
Em(Kd)
112
Vu
115
Ve
116
ENCRYPTED CONTENT
113

DESCRIPTION OF REFERENCE NUMERALS

ST1	DO MAC CALCULATED VALUES MATCH ?				
ST2	TURN ON SWITCH				
ST3	TURN OFF SWITCH				
1	DVD MEDIUM	2	RECORDER	3	PLAYER
4	DVD DRIVE	4a	INTERFACE	5	HOST
11	MEDIUM ID	12	MEDIUM KEY BLOCK (MKB)		
13	ENCRYPTED CONTENT	42, 52	MAC CALCULATING BLOCK		
46	DEVICE KEY	46a	FIRST HALF PORTION OF DEVICE KEY		
47	DES ENCRYPTOR				
48	MEDIUM UNIQUE KEY CALCULATING BLOCK				
49, 49a	DES ENCRYPTOR				
49b	DES DECRYPTOR	53	COMPARING PORTION THAT COMPARE MACS		
54	ENCRYPTING/DECRYPTING MODULE				
55	MEDIUM UNIQUE KEY CALCULATING BLOCK				
56a	SECOND HALF PORTION OF DEVICE KEY			57	DES DECRYPTOR
58	DEVICE KEY COMBINING PORTION			59, 59a	DES DECRYPTOR
61	MEDIUM UNIQUE KEY CALCULATING BLOCK				
62	PARAMETER A	63	ENCRYPTING/DECRYPTING MODULE		
64	PARAMETER B	65	DES ENCRYPTOR		
66	DES DECRYPTOR				
101	MEDIUM	104	DRIVE	105	HOST
111	EKB	112	ENCRYPTED DISC KEY		
113	ENCRYPTED CONTENT	114	DISC ID		
115	UNIT KEY GENERATING VALUE	116	EMBEDDED KEY GENERATING VALUE		